Information for Prospective Applicants

iGEM Competition

The International Genetically Engineered Machine (iGEM) Competition is a worldwide synthetic biology competition for undergraduate students. Each year, student teams from around the globe are given a kit of biological parts called BioBricks and work over the summer to build a novel single-celled organism or 'biological machine'.

Students in the past have designed bacteria that produce new types of drugs and biofuels, act as biosensors for toxic pollutants, and serve as biological computation platforms. The competition culminates in the iGEM Giant Jamboree held in Boston, Massachusetts, where iGEM teams from around the world come together to present their synthetic biology projects.

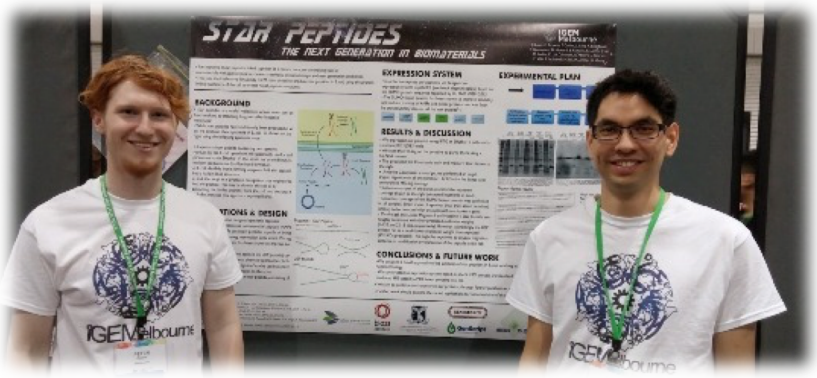
iGEM was established in 2003 at the Massachusetts Institute of Technology (MIT) with five teams competing. Since then, the competition has grown exponentially, both in size and prestige. The 2014 iGEM Giant Jamboree saw 2,300 participants competing in 245 teams, each trying to solve the world's greatest challenges through synthetic biology innovation. For more information about the competition, please visit the iGEM Competition website: http://igem.org/Competition.

History of the Melbourne iGEM Team

Currently, iGEM is the only opportunity for undergraduate students at the University of Melbourne to completely design and develop an innovative research project. Over the years, the Melbourne iGEM Team has enjoyed much success in the iGEM Competition, often rivalling some of the most prestigious universities in the world, including Harvard University, MIT, Cambridge University. Read about the achievements of past Melbourne iGEM Teams by following the links to the news articles below.

In 2014, under the tutelage of a number of academic leaders including Professor Heung-Chin Cheng and Professor Paul Gooley from the Bio21 Institute, Associate Professor Neil O'Brien-Simpson from the Melbourne Dental School and Dr Angus Johnston from the Nanomaterials for Biology Group at Monash University, the Melbourne iGEM Team developed a design concept for producing star peptides using the bacteria *Escherichia coli*. Star peptides are molecules made up of several linear peptides linked together at a central core, and have applications as drug delivery vehicles and next generation antibiotics.

In addition to their scientific work, the Melbourne iGEM Team also focused on science outreach, educating the public about synthetic biology during National Science Week and publishing a children's book titled *The Adventures of E. Coli*, which introduces young children to the concepts of bacterial growth and genetic engineering. The team presented their work at the iGEM Giant Jamboree in Boston, and was awarded a Bronze Medal. For more information about the 2014 Melbourne iGEM Team, please visit the 2014 Melbourne iGEM website: http://2014.igem.org/Team:Melbourne.



News Articles:

- http://www.engineersaustralia.org.au/sites/default/files/resources/Learned%20Groups/Interest%20Groups/Young%20Engineers%20Australia/2008%20Feb%20Stud%20News.pdf
- http://musse.unimelb.edu.au/december-14-150/students-engineering-next-breakthrough-antibiotics
- http://www.defencescienceinstitute.com/2015/02/05/defence-science-institute-synthetic-biology-initiative/

2016 Melbourne iGEM Team

The 2016 Melbourne iGEM Team will comprise around 10 members from a range of disciplines, including science, biomedicine, engineering, computer science and mathematics. The team will spend Semester 2, 2015 designing and developing a synthetic biology project, and 10 to 12 weeks over the summer working on the project. The project will be completed in 2016, and presented at the 2016 iGEM Giant Jamboree.

We are currently looking for bright and passionate undergraduate students from the University of Melbourne to join the 2016 Melbourne iGEM Team. As part of the 2016 Melbourne iGEM Team, you will have a chance to design and develop a synthetic biology project of your own, gain critical laboratory experience, and compete with hundreds of other universities at the 2016 iGEM Giant Jamboree. The tasks that you can be expected to complete as a member of the 2016 Melbourne iGEM Team include:

1. **Research on project ideas.** The ideas of the iGEM project are entirely student-driven. To design a new project, members of the 2016 Melbourne iGEM Team will often be asked to do searches of literature using Google Scholar, and read articles from scientific journals. A high level of independent research will be expected.
2. **Development of experimental methods.** The 2014 Melbourne iGEM Team has built up a library of protocols and experimental methods. However, the project that the 2016 Melbourne iGEM Team pursues will likely require new methods. Members of the 2016 Melbourne iGEM Team may therefore need to look up protocols in the literature and adapt them to the project requirements.
3. **Wet-lab work and mathematical or computer modelling.** In joining the 2016 Melbourne iGEM Team, you will have the opportunity to participate in the laboratory and learn many standard techniques in molecular biology. The 2016 Melbourne iGEM

Team will also require the input of students from non-biological disciplines, such as engineering and computer science, in order to accomplish tasks such as modelling a biological system using software such as MATLAB, designing a microfluidic device with biological applications or designing an electrical device which interfaces with a biological system. If you have an interest in interdisciplinary research between your field and biology, it is likely that iGEM will be able to accommodate it.

The scope of iGEM also extends into non-scientific areas, including biotechnological entrepreneurship, bioethics, science outreach, marketing, and website design. Hence, students from a business, law, arts, design, or marketing background are strongly encouraged to apply. For example, you could create a business plan for a iGEM-created company, examine the ethics of synthetic biology, or design a science outreach program for high school students – the possibilities are endless!

Application and Selection Process

To apply for a position within the 2016 Melbourne iGEM Team, please submit the following documents:

1. **Melbourne iGEM Application Form:** The application form is a Google Form that can be accessed via the following link: https://goo.gl/Q60uUo.

2. **Curriculum Vitae (CV):** The CV is to be emailed to melbourneuni.igem@gmail.com as an attachment. Please use the following template for the title of the document: '[First Name] [Last Name] – CV', as in 'John Smith – CV'.

3. **Academic Transcript:** An electronic copy of your academic transcript can be downloaded from the Student Portal. The academic transcript is to be emailed to melbourneuni.igem@gmail.com as an attachment. Please use the following template for the title of the document: '[First Name] [Last Name] – Academic Transcript', as in 'John Smith – Academic Transcript'.

Applicants will be selected for an interview on the basis of their application. Successful applicants will be notified after all interviews have completed.

Applications for Melbourne iGEM close at 11.59 PM on Friday, 21 August 2015. Late or incomplete applications will not be considered.

For general updates on the Melbourne iGEM Team, please follow us on Facebook via the following link: https://www.facebook.com/MelbourneUniIGem. If you have any queries or concerns, please email Victor Lin at melbourneuni.igem@gmail.com.